

REMARKS

Reconsideration of the application is requested in view of the above amendments and the following remarks. Claims 1, 6, 7, 12, 13, 15-17, 21, 26, 28, 33, 34, 36-39 and 49 have been amended and are fully supported by Figures 3 and 7 and the description at pages 6-9 of the present application.

Drawing and Claim Objections

The drawings were objected to under 37 CFR 1.83(a) for not showing every limitation of claim 39. Applicants submit that the limitation "the input shaft and the second shaft are coaxial with the second longitudinal axis," required by claim 39 is shown and described with reference to Figures 3-5 of the present application. Withdrawal of the objection is respectfully requested.

Claim 1 has been amended to make consistent reference to the first shaft. Withdrawal of the objection to claim 1 is respectfully requested.

§112 Rejections

Claims 1-7, 12-26, 28-31, 33, 34, 36-39 and 42-44 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification. Claims 1-7, 12-26, 28-31, 33, 34, 36-39 and 42-44 were also rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants respectfully traverse these rejections.

Concerning the limitation "the planetary gears continuously rotating about the sun gear when the sun gear is driven by the first shaft," or a similar limitation found in claims 1, 12, 28 and 36, and the limitation "a ring gear . . . being fixed to said housing so as to be immovable relative to said sun gear and said planetary gears," (as amended) or a similar limitation found in claims 21 and 34, applicants submit that these limitations are supported by at least the description of Figures 1-5 at pages 6-7 of the present application as follows.

The drive train 18 includes a reduction drive 19 that includes a drive shaft 21 that carries a sun gear 22, which is integral with the shaft 21, and a plurality of planetary gears 26, 27, 28, 29 supported between a pair of planetary gear plates 31, 32. The plates 31, 32 carry a plurality of shafts 36, 37, 38, 39 that support gears 26-29. A second shaft 43 of reduction drive 19 is integral

with the plates 31, 32. A ring gear 44 of the reduction drive 19 is integrally mounted in second housing member 42, which housing member is secured to the vehicle frame (for example, see the example embodiment shown in Figures 13 and 14). Because the ring gear is "integrally mounted" to the housing member 42, the ring gear is "fixed to the housing". Further, because the housing is mounted to the vehicle frame, and the drive shaft 21 and second shaft 43 (which are integrally secured to the sun and planetary gears, respectively) are rotatable relative the housing, the ring gear is also immovable relative to the sun gear and planetary gears.

As described above, the ring gear maintains a fixed position due to being integral with housing member 42, and the sun gear 22 must rotate when drive shaft 21 rotates because the sun gear 22 is integral with drive shaft 21. As a result, the planetary gears 26, 27, 28, 29 must rotate about shafts 36, 37, 38, 39 and also rotate around the circumference of sun gear 22 (that is, planetary gear plates 31, 32 must rotate relative to sun gear 22) in order for the rotation of drive shaft 22 to be translated into rotation of second shaft 43.

Further to the above, the limitations of claim 39 related to the coaxial arrangement of the several shafts and axes are fully supported by at least Figure 3 of the present specification, and there is no problem understanding the limitations of that claim when referencing Figure 3 and the related description of that figure on pages 6 and 7 of the present application.

Applicants submit that the limitations of claims 1-7, 12-26, 28-31, 33, 34, 36-39 and 42-44 are properly described and definite. Withdrawal of the rejections is respectfully requested.

§ 103 Rejections

Claims 1-5, 12-28, 21, 22, 28-34, 35, 36-39, 44, 45 and 47-49 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bombardier, U.S. 3,698,497 in view of Avramidis et al., U.S. 3,884,097, and Baxter, U.S. 5,954,612. Applicants respectfully traverse this rejection.

Bombardier discloses a snowmobile with a continuously variable transmission assembly that includes drive and driven pulleys 38, 46. Bombardier fails to disclose a planetary gear system.

Avramidis discloses a planetary gear system that includes a sun gear 150 mounted on an output/input shaft 32, planetary gears 152 mounted in a planetary gear carrier 174, and a hollow shaft 190 to which an output sprocket 156 is mounted. Shaft 190 is secured to planetary gear carrier 174 and further secured to ring gear carrier 180 in some configurations. Thus, shaft 32 might be considered generally equivalent to the first shaft (to the extent it is coupled to the sun gear) and shaft 190 might be considered generally equivalent to the second shaft (to the extent it is coupled to the planetary gears) of claims 1, 12, 21, 28, 34, 36, 39, 45 and 49 of the present application.

A ring gear 154 disclosed by Avramidis is mounted to the ring gear carrier 180. Ring gear 154 is engaged by planet gears 152 and is movable axially in a direction parallel to the axis of shafts 32 and 190, and rotatably about the sun gear 150 and planetary gears 152. Ring gear 154 has multiple axial positions and multiple rotated radial positions that are possible. Furthermore, the movability of ring gear 154 is essential in order for the transmission to have idle, reverse and forward transmission stages. Therefore, Avramidis fails to disclose or suggest a "ring gear means having a single axial and radial position whereby the planetary gears and sun gear rotate relative to the ring gear at all times when the drive shaft rotates," as required by claim 12, or "a ring gear engaging said planetary gears and being fixed to said housing so as to be immovable relative to said sun gear and said planetary gears," as required by claim 21, or "said ring gear being fixed to the housing and being immovable relative to said sun gear and said planetary gears," as required by claim 34.

Avramidis further discloses a first centrifugal clutch 28, a second centrifugal clutch 60, and an overrunning clutch 94 that rotate about the axis of respective shafts 32, 26, 26. Shaft 32 also serves as the drive shaft of the planetary gear system 20 with the sun gear 150 being secured to one end of shaft 32. An output shaft 190 of the gear system 20, which is coupled to planetary gears 152, is coaxial with shaft 32. As a result, the first centrifugal clutch shaft 32 is coaxial with the input shaft 32 of the planetary gear system 20, and the input and output shafts 32, 190 of the planetary gear system 20.

Because the shafts that carry second clutch 60 and overrunning clutch 94 are not coaxial with either the input shaft 32 or the output shaft 190 of the planetary gear system 20, Avramidis

fails to disclose or suggest "said clutch axis being coaxial with said second shaft axis," as required by claim 1, or "said first shaft axis being coaxial with said secondary clutch axis," as required by claim 28.

Avramidis also discloses a specific configuration for transfer of power from an engine 14 to a track 16 through an automatically shiftable stage 18 (includes clutches 28, 60, 94) and a manually shiftable stage 20 (includes the planetary gear system). The engine 14 rotates input shaft 24, which actuates some combination of clutches 28, 60, 94 to rotate shaft 34, thereby rotating sun gear 150. Sun gear 150 causes rotation of either or both of planetary gears 152 and ring gear 154 to rotate output shaft 190, which then rotates sprocket 156 and chain 158 to power track 16. There is no disclosure or suggestion by Avramidis of rearranging these features (clutches 28, 60, 94, shafts 32, 190, gears 150, 152, 154, and sprocket/chain 156, 158) in a different order or reversing the direction of power transfer to accomplish the same function of transferring power from engine 12 to track 16. For example, Avramidis fails to disclose or suggest "a primary clutch driven by said second shaft means," as required by claim 34 (the equivalent of shaft 190 driving any of clutches 28, 60, 94), or "said second shaft means driving said endless drive track through said primary clutch and said secondary clutch," as required by claim 36.

Avramidis also discloses that the input shaft 32 and output shaft 190 of the planetary gear system 20 are coaxial with the first centrifugal clutch 28 and the output shaft 24 of the engine 14. Track 16 is driven by a chain 158 (driven by sprocket 156 mounted to shaft 190 at the output side of planetary gear system 20) that rotates sprocket 160, shaft 162 and sprocket 164 associated with track 16. Furthermore, Avramidis fails to disclose or suggest arranging any of the features of planetary gear system 20 or any of the clutches 28, 60, 94 on or coaxial with shaft 162 associated with track 16. Therefore, Avramidis fails to disclose or suggest "the input shaft and the second shaft are coaxial with the second longitudinal axis", as required by claim 39, or "a sprocket that rotates about an axis of an endless track drive shaft positioned within the endless track, wherein the sprocket is coaxially connected to and driven by the second shaft," as required by claim 45, or "the first longitudinal axis being coaxial with the primary clutch axis and the second longitudinal axis being coaxial with the secondary clutch axis . . . and the input shaft and

the second shaft are coaxial with one of the axes selected from the group consisting of the first longitudinal axis and the second longitudinal axis," as required by claim 49.

Further to the above, Bombardier and Baxter fail to remedy the deficiencies of Avramidis and also fail to disclose or suggest, alone or in combination with Avramidis, the limitations of claims 1, 12, 21, 28, 34, 36, 39, 45 and 49. Withdrawal of the rejection is respectfully requested.

Claims 6, 7, 19, 20, 26, 33 and 46 were rejected under 35 U.S.C. § 103(a) as unpatentable over Bombardier in view of Avramidis and Baxter, and further in view of Showalter, U.S. 5,833,566. Applicants respectfully traverse this rejection.

As discussed above Bombardier, Avramidis and Baxter fail to disclose or suggest every limitation of claims 1, 12, 21 and 45. Showalter fails to remedy the deficiencies of Bombardier, Avramidis and Baxter as they relate to claims 1, 12, 21 and 45. Therefore, claims 6, 7, 19, 20, 26, 33 and 46 are allowable for at least the reason they are dependant upon an allowable base claim. Applicants do not concede the correctness of this rejection.


In view of the above, Applicants request reconsideration of the application in form of a Notice of Allowance.

Respectfully submitted,

MERCHANT & GOULD P.C.
P. O. Box 2903
Minneapolis, Minnesota 55402-0903
612.332.5300

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Douglas P. Mueller
Reg. No. 30,300
DPM/JNR:ae